

# Locally Equivalent Weights for Bayesian MrP

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# Real Data: Marital Name Change Survey

Analysis of changing names after marriage<sup>1</sup>.

- **Target population:** ACS survey of US population 2017–2022<sup>2</sup>
- **Survey population:** Marital Name Change Survey (from Twitter)<sup>3</sup>
- **Respose:** Did the female partner keep their name after marriage?
- For regressors, use bins of age, education, state, and decade married.

Survey observations:  $N_S = 4,364$

Target observations (rows):  $N_T = 4,085,282$

Uncorrected survey mean:  $\frac{1}{N_S} \sum_{i=1}^{N_S} y_i = 0.462$

Raking:  $\hat{\mu}_{CW} = 0.263$

MrP:  $\hat{\mu}_{MrP} = 0.288$  (Post. sd = 0.0169)

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<sup>1</sup>Based on Alexander (2019).

<sup>2</sup>Ruggles et al. 2024.

<sup>3</sup>Cohen 2019.

## Covariate balance for primary effects

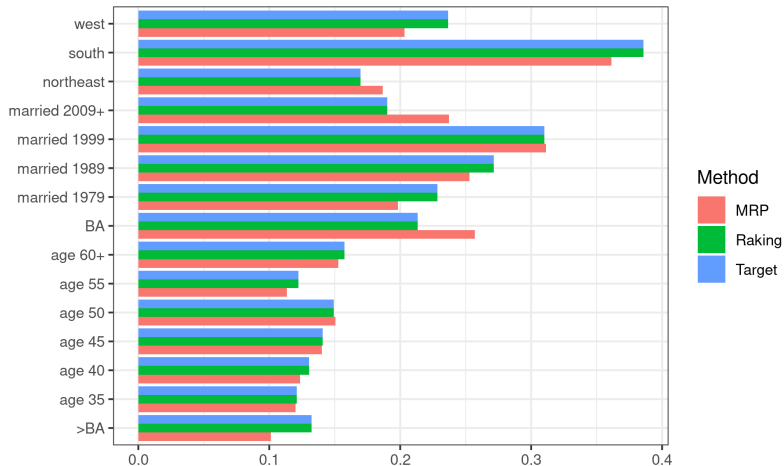


Figure 1: Imbalance plot for primary effects

## Covariate balance for interaction effects

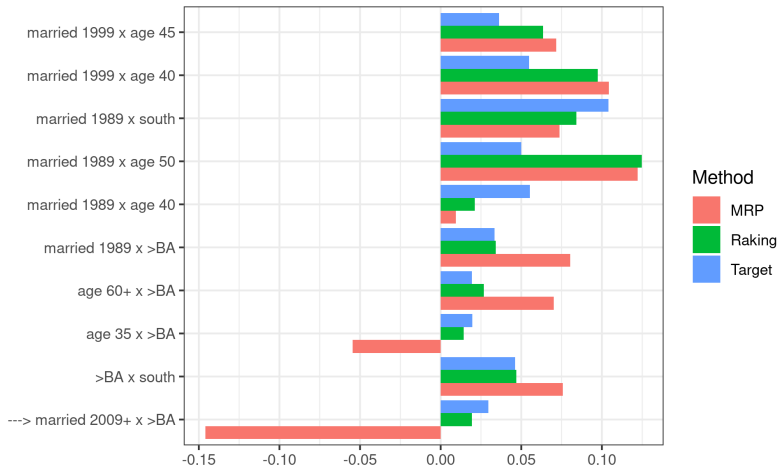
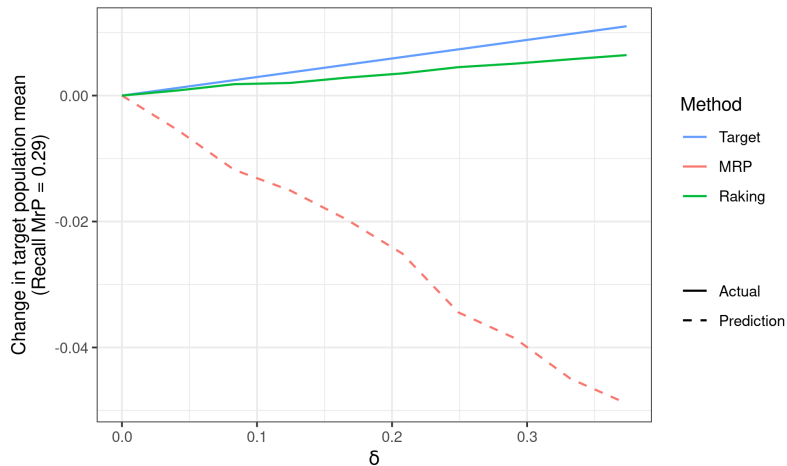
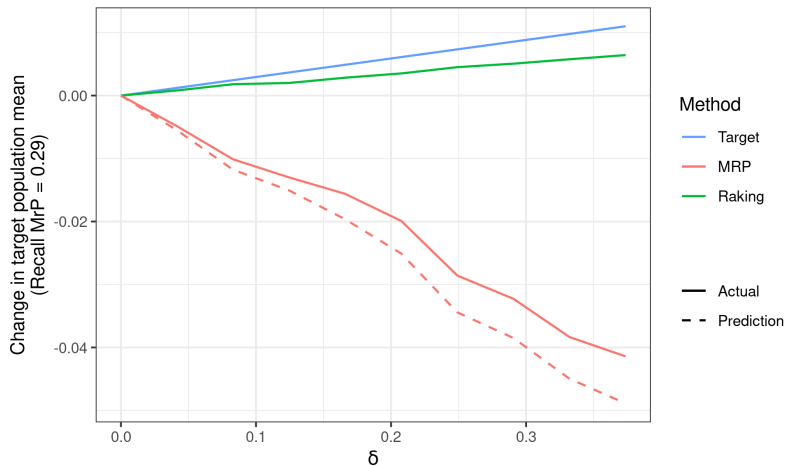


Figure 2: Imbalance plot for select interaction effects



**Figure 3:** Predictions for the name change dataset

## Predictions and actual MCMC results



**Figure 4:** Predictions and refit for the name change dataset

Running ten MCMC refits: 10 hours    Computing approximate weights: 16 seconds

Analysis of national support for gay marriage.<sup>4</sup>

- **Target population:** US Census Public Use Microdata Sample 2000
- **Survey population:** Combined national-level polls from 2004
- **Response:** “Do you favor allowing gay and lesbian couples to marry legally?”
- For regressors, use race, gender, age, education, state, region, and continuous statewide religion and political characteristics, including some analyst–selected interactions.

Survey observations:  $N_S = 6,341$

Target observations (rows):  $N_T = 9,694,541$

Uncorrected survey mean:  $\frac{1}{N_S} \sum_{i=1}^{N_S} y_i = 0.333$

Raking:  $\hat{\mu}_{\text{CW}} = 0.33$

MrP:  $\hat{\mu}_{\text{MrP}} = 0.337$  (Post. sd = 0.039)

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<sup>4</sup>Based on Kastellec, Lax, and Phillips (2010), see also Lax and Phillips (2009).

## Covariate balance for primary effects

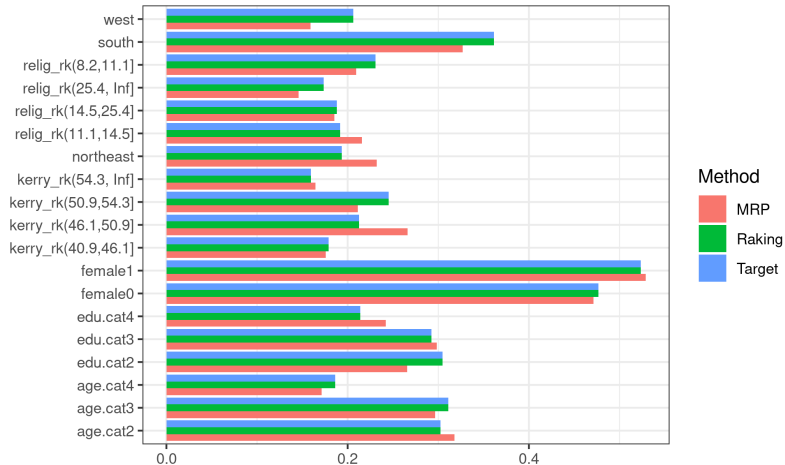


Figure 5: Imbalance plot for primary effects



## Covariate balance for interaction effects

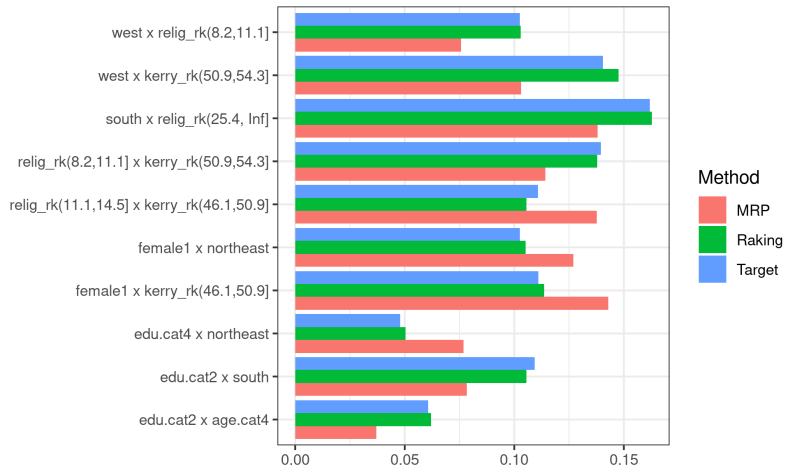
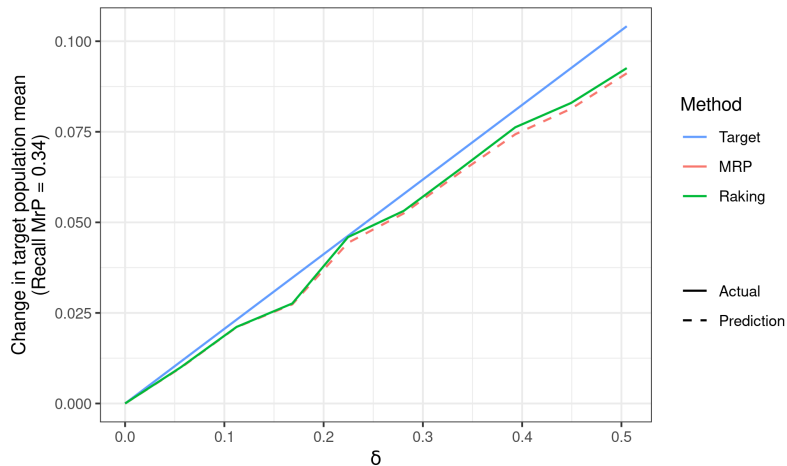
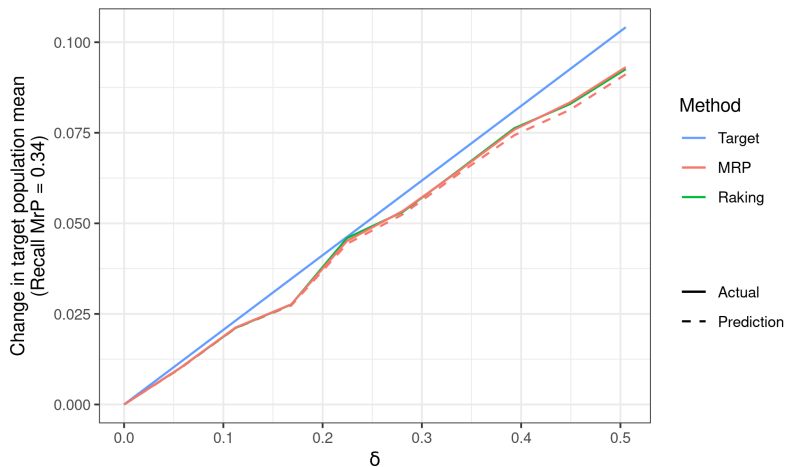


Figure 6: Imbalance plot for select interaction effects



**Figure 7:** Predictions for the gay marriage dataset

## Predictions and actual MCMC results



**Figure 8:** Predictions and refit for the gay marriage dataset

Running ten MCMC refits: 11 hours    Computing approximate weights: 23 seconds

# References



Alexander, M. (2019). *Analyzing name changes after marriage using a non-representative survey*. URL: <https://www.monicaalexander.com/posts/2019-08-07-mrp/>.



Cohen, P. (Apr. 2019). *Marital Name Change Survey*. DOI: 10.17605/OSF.IO/UZQDN. URL: [osf.io/uzqdn](https://osf.io/uzqdn).



Kastellec, J., J. Lax, and J. Phillips (2010). “Estimating state public opinion with multi-level regression and poststratification using R”. In: *Unpublished manuscript, Princeton University* 29.3.



Lax, J. and J. Phillips (2009). “Gay rights in the states: Public opinion and policy responsiveness”. In: *American Political Science Review* 103.3, pp. 367–386.



Ruggles, S. et al. (2024). *IPUMS USA: Version 15.0 [dataset]*. DOI: 10.18128/D010.V15.0. URL: <https://usa.ipums.org>.